PATENT
Customer Number 22,852
Attorney Docket No. 7040.0103.00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	
Gianluigi HOTELLIER et al.	)	
Serial No.: Not yet assigned	)	Group Art Unit: Not yet assigned
Filed: October 1, 2001	)	Examiner: Not yet assigned
For: PROCESS FOR PRODUCING A SILICA-REINFORCED RUBBER COMPOUND	)	

Assistant Commissioner for Patents
Washington, DC 20231

Sir:

PRELIMINARY AMENDMENT

Prior to the examination of the above-captioned application, please amend this application as follows:

IN THE SPECIFICATION:

Please amend the specification, as follows:

Add two section headings, a section subheading, and a paragraph immediately after the title PROCESS FOR PRODUCING A SILICA-REINFORCED RUBBER COMPOUND, as follows:

LAW OFFICES
NNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
ASHINGTON, DC 20005
202-408-4000

--CROSS-REFERENCES TO RELATED APPLICATIONS

This application is a continuation of International Patent Application No. PCT/EP00/02665, filed March 27, 2000, in the European Patent Office; additionally, Applicants claim the right of priority under 35 U.S.C. § 119(a) - (d) based on patent application No. 99830189.9, filed April 1, 1999, in the European Patent Office; further, Applicants claim the benefit under 35 U.S.C. § 119(e) based on prior-filed, copending provisional application No. 60/134,665, filed May 18, 1999, in the U.S. Patent and Trademark Office; the contents of all of which are relied upon and incorporated herein by reference.

BACKGROUND OF THE INVENTION

Field of the Invention--

Page 1, line 9, add section subheading --Description of the Related Art-- prior to the start of the paragraph beginning "Hereinbelow, the expression 'closed batch mixer' . . . ."

Page 6, line 34, add section heading --SUMMARY OF THE INVENTION-- prior to the start of the paragraph beginning "The Applicant has found that it is possible . . . ."

Page 12, line 5, add section heading --BRIEF DESCRIPTION OF THE DRAWINGS-- prior to the start of the paragraph beginning "In any case, a better understanding . . . ."

LAW OFFICES
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FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
ASHINGTON, DC 20005
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Page 12, line 19, add section heading --DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS-- prior to the start of the paragraph beginning "The device 1 comprises a stainless steel container 2 . . . ."

Add a new Page 36 after the claims, adding the following ABSTRACT OF THE DISCLOSURE. A new, separate Page 36 including the ABSTRACT OF THE DISCLOSURE is enclosed.

--ABSTRACT OF THE DISCLOSURE

A process for manufacturing a composition of matter from components includes combining the components to produce a blend and combining the blend with a crosslinking system to produce the composition. The components include a polymer base, a silica reinforcing filler, a silica-binding agent, and further product and process additives. Combining the components is carried out in a closed mixer comprising a piston and a pair of rotors. While combining the components, values of at least two indirect parameters and at least two direct parameters are measured at least every two minutes. The at least two indirect parameters comprise blend temperature and power absorbed by the rotors. The at least two direct parameters comprise pressure exerted by the piston and rotations of the rotors. The at least two indirect parameters are maintained within respective ranges of predetermined values by controlling one or more of the at least two direct parameters.--

LAW OFFICES
NNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
ASHINGTON, DC 20005
202-408-4000

IN THE CLAIMS:

Please cancel, without prejudice or disclaimer, claims 2-16, and add new claims 17-33, as follows:

--17. (new) A process for manufacturing a composition of matter from components comprising:

a polymer base;

a silica reinforcing filler;

a silica-binding agent; and

further product and process additives;

wherein the process comprises the steps of:

combining the components to produce a blend; and

combining the blend with a crosslinking system to produce the composition;

wherein the step of combining the components to produce the blend is carried out in a closed mixer comprising a piston and a pair of rotors,

wherein, during the step of combining the components to produce the blend, values of at least two indirect parameters and at least two direct parameters are measured at least every two minutes,

wherein the at least two indirect parameters comprise blend temperature and power absorbed by the rotors,

wherein the at least two direct parameters comprise pressure exerted by the piston and rotations of the rotors, and

LAW OFFICES
FINNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

wherein the at least two indirect parameters are maintained within respective ranges of predetermined values by controlling one or more of the at least two direct parameters.

18. (new) The process of claim 17, wherein, during the step of combining the components to produce the blend, values of the at least two indirect parameters and the at least two direct parameters are measured at a rate of more than once per second.

19. (new) The process of claim 17, wherein the components comprise, per one hundred parts-by-weight (phr) of polymer base:

polymer base	100 phr;
silica	40-80 phr; and
silica-binding agent	4%-15% of the silica.

20. (new) The process of claim 17, wherein the components comprise, per one hundred parts-by-weight (phr) of polymer base:

polymer base	100 phr;
carbon black	0-80 phr;
silica	10-80 phr;
silica-binding agent	4%-15% of the silica;
zinc oxide (ZnO)	1-3 phr;
stearic acid	0-3 phr;
anti-deteriorating agents	1-3 phr;
plasticizing oil	0-30 phr;

LAW OFFICES
FINNEGAN, HENDERSON, FARABOW, GARRETT, & DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

anti-ozone wax	0.5-3 phr; and
specific chemical ingredients	0-15 phr.

21. (new) The process of claim 17, wherein the respective ranges of predetermined values are predetermined for each specific composition to be manufactured.

22. (new) The process of claim 21, wherein the respective ranges of predetermined values are predetermined for each specific composition to be manufactured by the steps of:

a) determining, for a specific reference, average values and related variability ranges for a plurality of properties of a blend of the specific reference, a composition of the specific reference before vulcanization, and a composition of the specific reference after vulcanization;

b) producing a sample using selected initial indirect parameters;

c) determining, for the sample, values for a plurality of properties of a blend of the sample, a composition of the sample before vulcanization, and a composition of the sample after vulcanization;

d) comparing corresponding values of the plurality of properties of the specific reference and the sample;

e) modifying at least one of the selected initial indirect parameters related to one or more sample values that may be outside of corresponding average values and related variability ranges of the specific reference;

f) repeating steps b), c), d), and e) until all sample values are inside of the corresponding average values and related variability ranges of the specific reference; and

g) setting, as the respective ranges of predetermined values of the at least two indirect parameters for each specific composition to be manufactured, average values of the initial indirect parameters and related variability ranges of the initial indirect parameters that result in all sample values being inside of the corresponding average values and related variability ranges of the specific reference.

23. (new) The process of claim 22, wherein the plurality of properties of the blend of the sample includes viscosity and a percentage of silica-binding agent reacted with silica reinforcing filler.

24. (new) The process of claim 22, wherein the plurality of properties of the composition of the sample before vulcanization includes viscosity, a percentage of silica-binding agent reacted with silica reinforcing filler, and rheometric properties.

25. (new) The process of claim 22, wherein the plurality of properties of the composition of the sample after vulcanization includes density, hardness, modulus of elasticity, breaking load, and elongation.

26. (new) The process of claim 17, wherein the step of combining the components to produce the blend comprises a silicization phase followed by a silanization phase, wherein the blend temperature substantially increases during the silicization phase, and wherein the blend temperature is substantially constant during the silanization phase.

LAW OFFICES
NNEGAN, HENDERSON,
FARABOW, GARRETT,
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1300 I STREET, N. W.
WASHINGTON, DC 20005
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27. (new) The process of claim 26, wherein the silicization phase comprises at least three cycles carried out at different rotation speeds of the rotors, and wherein the rotation speeds of the rotors gradually decrease.

28. (new) The process of claim 26, wherein the blend temperature substantially increases during the silicization phase due to at least three peaks of supplied power.

29. (new) The process of claim 28, wherein the at least three peaks of supplied power are obtained by lowering the piston toward the rotors.

30. (new) The process of claim 26, wherein a rotation speed of the rotors during the silicization phase is substantially constant.

31. (new) The process of claim 17, wherein the at least two indirect parameters comprise energy absorbed by the rotors.

32. (new) A composition for a tyre, manufactured by the process of claim 20.

33. (new) A tyre for vehicle wheels, provided with a tread band made of a composition manufactured by the process of claim 19.--

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1300 I STREET, N. W.
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REMARKS

Applicants submit this Preliminary Amendment together with a continuation application under 37 C.F.R. § 1.53(b).

In this Preliminary Amendment, Applicants add section headings, section subheadings, and an Abstract of the Disclosure to conform to U.S. practice. Additionally, Applicants add claims to the right of priority and benefit. Further, Applicants cancel, without prejudice or disclaimer, claims 2-16, and add new claims 17-33, which include the same subject matter as the original claims, to improve clarity. The originally-filed specification, claims, abstract, and drawings fully support the amendments to the specification and the addition of new claims 17-33. No new matter was introduced.

If there is any fee due in connection with the filing of this Preliminary Amendment, please charge the fee to our Deposit Account No. 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: October 1, 2001

By: ______________________

Lawrence F. Galvin
Reg. No. 44,694

LAW OFFICES
NNEGAN, HENDERSON,
FARABOW, GARRETT,
& DUNNER, L.L.P.
1300 I STREET, N. W.
WASHINGTON, DC 20005
202-408-4000

ABSTRACT OF THE DISCLOSURE

A process for manufacturing a composition of matter from components includes combining the components to produce a blend and combining the blend with a crosslinking system to produce the composition. The components include a polymer base, a silica reinforcing filler, a silica-binding agent, and further product and process additives. Combining the components is carried out in a closed mixer comprising a piston and a pair of rotors. While combining the components, values of at least two indirect parameters and at least two direct parameters are measured at least every two minutes. The at least two indirect parameters comprise blend temperature and power absorbed by the rotors. The at least two direct parameters comprise pressure exerted by the piston and rotations of the rotors. The at least two indirect parameters are maintained within respective ranges of predetermined values by controlling one or more of the at least two direct parameters.